

## Executive Summary

### Introduction (Section 1)

At its June 2001 meeting, the North Pacific Fishery Management Council adopted a suite of alternatives, elements and options for analysis of a rationalization program for the Bering Sea and Aleutian Islands (BSAI) crab fisheries. After a status report and pre-initial review at its December 2001 and February 2002 meetings, the Council amended its motion to its current form and scheduled this item for initial review at its April 2002 meeting. The document is the initial review draft of the analysis of those alternatives. If the document is deemed to be sufficient, selection of a preferred alternative for the proposed rationalization of the BSAI crab fisheries would be scheduled for the June 2002 Council meeting.

The proposed action would develop an IFQ or cooperative program to manage the BSAI crab fisheries. A change in management from the current License Limitation Program (LLP) may be necessary to alleviate problems of resource conservation, bycatch and handling mortality, excessive harvesting capacity, lack of economic stability, and safety that have arisen under the race to fish. The current LLP management program and its predecessor the vessel moratorium may have resolved these problems.

Final action for this package is unlike most final actions taken by the Council, since Congress may need to modify their moratorium on IFQ programs (and perhaps jurisdiction over inshore processors) before the Council could submit either an IFQ or cooperative alternative to the Secretary of Commerce (SOC). Once the Council's preferred alternative is identified, it would then need to be melded into the crab EIS that is also currently being developed as the preferred alternative. It is expected that this can be completed during the summer of 2002 for action by the Council in October, so that the formal EIS/RIR/IRFA package could be submitted to the SOC by the end of this year (assuming Congressional action allowing the action by that time).

The analysis considers three overriding alternative management structures for the BSAI crab fisheries; status quo (or continued management under the LLP), an IFQ program, and a cooperative program. The IFQ program alternative includes options defining either a one-pie, harvester only IFQ program or a two-pie program, which would include both harvester shares and processor shares. Two cooperative program alternatives are analyzed. The Voluntary Cooperative alternative is a program that would allocate shares to harvesters and processors and allow each harvester to join a cooperative with one or more other harvesters associated with one or more processors. The Plurality Assignment Cooperative alternative is a program that would allow each harvester to join a cooperative associated with the processor that it delivered the most crab to during a specified qualifying period. Harvesters that join a cooperative would receive an allocation based on qualifying catch history. Harvesters that elect not to join a cooperative would be limited to participating in an open access fishery. This program alternative includes several different options that would protect processor interests to varying degrees and that would define movement between cooperatives. The analysis examines several different aspects of the proposed programs and their impacts on the fisheries.

### Background (Section 2)

As a foundation for the analysis of alternatives, the analysis contains an extensive background section that describes the current conditions in the different fisheries under consideration for rationalization. The section includes subsections describing the affected environment, fishery biology, fishery management, the harvesting sector, the processing sector, community and social impacts, ex vessel prices, and various market and economic conditions. **Table E1** shows the maximum GHL, the minimum GHL, and closure years (if any) for the fisheries under consideration for rationalization.

Table E1: Maximum and Minimum GHLs for various crab fisheries and years the fishery was closed

Fishery	Maximum GHL (millions of pounds)	Minimum GHL (millions of pounds)	Closures (Years/Season)
Bering Sea Snow Crab ( <i>C. opilio</i> )	333 (1992)	25.3 (2001)	None
Bristol Bay Red King Crab	18 (1991)	5 (1996)	1994, 1995
Bering Sea Tanner ( <i>C. bairdi</i> )	39.2 (1991/92)	2.2 (1996)	1997, 1998, 1999, 2000, 2001
Pribilof Islands Red King Crab	3.4 (1993)	1.25 <sup>a</sup> (1998)	1991/92 & 1999, 2000, 2001
Pribilof Islands Blue King Crab	2.5 <sup>a</sup> (1995)	1.25 <sup>a</sup> (1998)	1991/92 & 1999, 2000, 2001
St. Matthew Blue King Crab	5 (1997)	2.4 (1995)	1999, 2000, 2001
Western Aleutian Islands (Dutch Harbor)	3.2	3.0	
Golden (Brown) King Crab	(1996, 1997, 1998)	(1998, 1999, 2000, 2001)	None
Eastern Aleutian Islands (Adak) Golden (Brown) King Crab	2.7 (1996, 1997, 1998)		None
Eastern Aleutian Islands (Adak) Red King Crab			1996/97, 1997/98, 1999/2000, & 2000/2001

<sup>a</sup>Combined red and blue king crab.

Table E2 reports the weighted average annual ex-vessel price of the various crab fisheries under consideration. These data were derived from ADF&G fishtickets. The data in the report generally show that the mid-1990s were in general strong years for ex-vessel prices. Ex-vessel prices also increased in 1999 and 2000 (relative to the 1997 and 1998) except in the Bristol Bay red king crab fishery.

Table E2: Weighted average annual ex-vessel prices from ADF&G fishtickets (prices have not been adjusted for inflation)

Year (Fishing Season)	WAI golden king <sup>1</sup>	Adak red <sup>1</sup>	Bristol Bay red king <sup>3</sup>	BS <i>C. opilio</i> <sup>3</sup>	BS <i>C. bairdi</i> <sup>2</sup>	EAI golden king crab <sup>2</sup>	Pribilof blue king <sup>3</sup>	Pribilof red king <sup>3</sup>	St. Matthew blue king <sup>3</sup>
1998-1999	\$ 2.04	closed	\$ 6.26	\$ 0.56	closed	\$ 1.87	\$ 2.34	\$ 2.39	\$ 1.87
1999-2000	\$ 3.14	closed	\$ 4.81	\$ 0.88	closed	\$ 3.22	closed	closed	closed
2000-2001	\$ 3.15	closed	\$ 4.14	\$ 1.85	closed	\$ 3.50	closed	closed	closed

1) Fishing seasons span two years

2) The fishing seasons that took place in one calendar year are identified by the first year listed in the year column.

Table E3 is a summary of the first wholesale prices derived from Commercial Operator Annual Report data. These prices were calculated by dividing the total first wholesale value reported by the processor by the total pounds of the product form produced.

Table E3: First Wholesale Crab Prices by Species and Product Form, 1991-2000 (prices have not been adjusted for inflation)

Species	Product	1998	1999	2000
Red King Crab	Shellfish Sections	\$ 5.52	\$11.25	\$ 9.11
	Whole	\$ 3.83	\$10.69	\$ 7.74
Blue King Crab	Shellfish Sections	\$ 4.80	Conf.	Conf.
Golden King Crab	Shellfish Sections	\$ 4.24	\$ 6.90	\$ 7.22
	Whole	\$ 4.90	\$ 3.79	\$ 4.60
<i>C. bairdi</i>	Shellfish Sections	\$ 4.81	\$ 4.23	\$ 5.83
	Whole	\$ 2.95	\$ 3.71	\$ 3.33
<i>C. opilio</i>	Shellfish Sections	\$ 2.03	\$ 2.92	\$ 4.16
	Whole	\$ 2.05	\$ 1.06	

Source: Commercial Operator's Annual Reports (1998-2000)

### Analysis of the Alternatives (Section 3)

Section 3 presents the analysis of the alternatives. The section begins with a brief discussion of the status quo, which draws from the extensive background analysis in Section 2.

### Biology, Management, Environmental, and Safety Implications of Rationalization (Section 3.2).

This section presents an analysis of the biological, management, environmental, and safety impacts of rationalization of the BSAI crab fisheries. This section examines the appropriateness of the different fisheries for rationalization, potential changes in deadloss, size limits, incidental catch, seasons, pot limits, the potential impacts of overlapping seasons of different species, and the effects of rationalization on rebuilding programs. The section also examines the environmental factors including the impacts of rationalization on endangered species and marine mammals. The section concludes with discussions of the division of management authority between State and federal managers and the impacts of rationalization on safety in the fishery. The analysis in this section was provided to Council staff by representatives of State of Alaska ADF&G and NMFS.

The analysis suggests that the Bering Sea *C. opilio*, Bristol Bay red king crab, Bering Sea *C. bairdi*, Pribilof blue king crab, Pribilof red king crab, St. Matthew blue king crab, and the two Aleutian Islands golden king crab be included in the rationalization program. The Aleutian Islands red king crab, the Aleutian Islands *C. bairdi*, the Pribilof golden king crab, and Bering Sea Tanneri fisheries are suggested for exclusion from rationalization.

Rationalization should have environmentally-friendly impacts on the crab stocks and their habitat as long as concerns over highgrading and ghost fishing from lost pots do not evolve. Managers are concerned that highgrading may occur when the time pressures are removed from the fishery. Fishermen will be more likely to keep only the highest valued catch since any catch landed will be counted against their quota. Therefore, keeping second quality crab (especially when there are large differences in ex-vessel price) might not maximize profits. Under the current low GHs and race-for-fish management system all marketable crab are currently being retained. The State of Alaska feels that new regulations will likely need to be developed to protect the biological integrity of the stock. They also indicate that onboard observer coverage and dockside sampling are needed to determine if changes in fishery selectivity occur and the mechanisms that cause those changes. Pot limits may be relaxed in a rationalized fishery. For pot limits to be changed the BOF would need to be petitioned or a proposal would need to be submitted to the BOF requesting that pot limits be modified.

Seasons for the different species proposed for inclusion in the rationalization program are considered. The primary biological objective in scheduling seasons is avoidance of mating and molting. Table E4 shows the molting and mating seasons for the different species being considered for rationalization. The analysis also considers the use of concurrent seasons for species included in the rationalization program. An advantage of multispecies fisheries is the potential decrease in mortality of discards. As crab fishing seasons are lengthened the possibility of gear conflicts with trawl and longline vessels increase. Those conflicts would need to be monitored to ensure that they were not increasing to an unacceptable level.

Table E4: Bering Sea Crab Fishery Molting/mating time periods as determined by the Crab Plan Team in September 2001

Species	Molting/mating time period
<i>C. opilio</i>	May 15 to July 31
<i>C. bairdi</i>	April 1 to July 31
blue king crab	February 1 to July 31
red king crab	January 15 to June 30
red king crab (Norton Sound)	September 15 to October 31
golden king crab	January 1 to December 31

The analysis also supports provisions which would create no allowance for overages or underages on the principle that overages and underages should be fully avoidable in a rationalized fishery. The analysis also

supports full accounting of deadloss. The analysis suggests that the slower pace of a rationalized fishery will improve sorting of crab by gear, thereby decreasing handling mortality and deadloss.

The analysis provides that the rationalized fisheries would need to be managed with TACs instead of the current GHL management. TAC management would provide certainty of allocations necessary to realize the full benefits of rationalization. The allocation of a minor open access fishery, as proposed in the Plurality Assignment cooperative program alternative, could also be problematic for managers that are required to monitor a small GHL in an open access fishery. The more precise management under a TAC (without provision for overages) could also aid rebuilding efforts in the fisheries.

Monitoring participants in a rationalized fishery would be challenging due, in part, to the extended seasons. The analysis supports the use of Vessel Monitoring Systems (VMS). VMS would not only improve monitoring activities of participants but also would improve data collection. ADF&G has suggested that the costs of this system could be borne by either participants in the fisheries or the federal government. Additional monitoring of landings may also be required. Observer requirements and the disbursement of costs of those requirements will also need to be assessed in a rationalized fishery.

The analysis assesses the need to maintain a minimum fleet size to ensure that harvests reach an optimum level. Caps on ownership could be used to ensure that fleets are maintained at a size necessary to maintain harvests in the event excessive stocks require additional harvesting power.

The section includes a discussion of the interaction of State and federal management and monitoring of the fisheries. Limitations of delegation of management authority by the federal government may require that NMFS assume responsibility for allocations of quota in the fisheries. Setting of TACs (or GHLs), regulating fishing activity, and collecting harvest data for monitoring harvest limits and enforcement of regulations are currently conducted by the State and could, for the most part, continue to be subject to State management in a rationalized fishery. Further detail on the joint management of the fisheries is provided in this section.

The section also presents an analysis of the environmental impacts of rationalization. Potential changes in stewardship and biological conservation, and the effects of rationalization on habitat are discussed. The section also examines the effects of rationalization on endangered species. A history of crab FMP consultations is presented, as well as a discussion of the implications of the Marine Mammal Protection Act.

The section concludes with a discussion of the implications of rationalization on safety in the fisheries.

### The Allocation of Harvest Shares (Section 3.3).

This section of the analysis examines the different alternatives for allocating harvest shares. The analysis examines the rules that define eligibility to receive an initial allocation and the calculation of those allocations. Both proposed options would base eligibility on whether a vessel has met the requirements for an LLP license. Table E5 shows the number of endorsed LLP licenses in the fisheries and the estimated number of vessels that would qualify for a crab endorsed LLP license and hence an initial allocation in each fishery being considered for rationalization.

Table E5: LLP licenses and the Estimated Number of Vessels that Qualify for LLP licenses endorsed for BSAI Crab Fisheries.

Fishery	Number of Permanent LLP Licenses	Number of Interim LLP Licenses	Estimated Number of Vessels Eligible for an Allocation
WAI (Adak) Golden King Crab	27	14	23
WAI (Adak) Red King Crab	24	22	28
Bristol Bay Red King Crab	260	89	266

Fishery	Number of Permanent LLP Licenses	Number of Interim LLP Licenses	Estimated Number of Vessels Eligible for an Allocation
Bering Sea <i>C. Opilio</i>	260	93	256
Bering Sea <i>C. Bairdi</i>	260	93	266
EAI (Dutch Harbor) Golden King Crab	27	14	20
Pribilof Blue King Crab	110	48	84
Pribilof Red King Crab	110	48	122
St. Matthew Blue King Crab	154	59	180

Source: NMFS Alaska Region RAM Office and State of Alaska ADF&G Fish ticket files.

The sum of permanent and interim licenses is the maximum number of vessels that could qualify. The “estimated number of vessels eligible for an allocation” is the minimum number that would qualify, as that does not include vessels that rely on Amendment 10 exemptions for qualification, which define limited exemptions and circumstances when activities from multiple vessels may be combined to meet the qualification criteria. The consistency of the different allocation options with the current LLP management is discussed. The section also includes quantitative analysis of the allocations under the different qualifying year options for each fishery. The analysis shows that the allocations in the Bering Sea *C. opilio*, Bristol Bay red king crab, Bering Sea *C. bairdi*, Pribilof blue king crab, St. Matthew blue king crab, and Western Aleutian Islands (Adak) red king crab are very similar under all of the qualifying year options. In the Pribilof red king crab fishery, the allocation to the leading four vessels varies somewhat under the different options. In the two Aleutian Islands golden king crab fisheries (particularly in the Western subdistrict), the allocations under the various options show greater variation. Graphical representations of the allocations and descriptive statistics appear in the section. Graphs included in this section show groupings of four vessels to protect confidential data. The same vessels are not always in the same groups for the different allocation options. The portion of the total allocation to catcher/processors in each fishery under each option is also shown.

#### The IFQ Program Elements (Section 3.4).

This section analyzes the options for development of an IFQ program. The section includes analyses of the various measures that define the rights to own, purchase, and use harvest shares in the different fisheries. The section includes an analysis of the two-pie IFQ alternative, including the initial allocation, transfer rights, and ownership and use caps on processor shares and limits on vertical integration.

#### Harvest Shares

The analysis examines use and ownership caps on harvest shares in the different fisheries at the initial allocation. These caps are intended to limit consolidation of harvest shares, in part, to ensure competition in the harvest sector. This analysis is limited by the poor availability of vessel and LLP license ownership information. Based on available data, no persons would exceed a 5 percent ownership cap in the Bering Sea *C. opilio*, Bristol Bay red king crab, Bering Sea *C. bairdi*, or St. Matthew blue king crab fisheries. Four persons would exceed the 5 percent cap in the Pribilof blue king crab fishery. Data concerning the number of persons exceeding an 8 percent or 5 percent cap in the Pribilof red king crab fishery cannot be shown because of confidentiality restrictions on the release of data. Several persons would exceed a 1 percent cap in all of these fisheries. In the Western Aleutian Islands golden king crab fishery, the number of persons exceeding a 40 percent, 20 percent, or 10 percent cap cannot be shown because of confidentiality restrictions on the release of data. In the Eastern Aleutian Islands golden king crab fishery, no persons would exceed the 40 percent cap. The number of persons exceeding the 20 percent cap in this fishery cannot be shown because of confidentiality restrictions on the release of data. If the allocation in Aleutian Islands golden king crab fisheries is based on the combined participation in both areas, no persons would exceed the 40 percent cap and the number of persons exceeding the 20 percent cap cannot be shown because of confidentiality restrictions on the release of data.

## Processing Shares

A complete analysis of the two-pie IFQ program is also contained in this section. Program elements including the initial allocation of shares, transfer rights, and ownership and use caps are examined. Two options for allocating processing privileges to catcher/processors are proposed. Under the first, catcher/processors would be allocated processing shares in the same manner as those shares are allocated to other processors. Alternatively, catcher/processors could be allocated a “catcher/processor share” that includes both harvest and processing privileges.

### Analysis of the option under which catcher/processors are allocated processing shares

If catcher/processors are allocated processing shares, in the Bering Sea *C. opilio*, the Bristol Bay red king crab, and the Bering Sea *C. bairdi* fisheries slightly more than 30 processors (including catcher/processors) will receive an allocation. The leading four processors would receive an average allocation of between 12 and 14 percent depending on which qualifying year option is selected. The average allocation would be less than 5 percent and the median<sup>1</sup> allocation would be approximately 1 percent or less. In the Pribilof red king crab, Pribilof blue king crab, and St. Matthew blue king crab fisheries approximately 15 processors would receive allocations. The leading four processors would receive on average less than 20 percent of the total allocation. The median allocation would be less than 5 percent. In the two Aleutian Islands golden king crab fisheries, between 8 and 13 processors would receive an initial allocation. The four largest processor allocations would be between 20 and 25 percent of the total allocation. In the Eastern Aleutian Islands fishery, the median allocation would be between approximately 4 and 8 percent of the total allocation. In the Western Aleutian Islands fishery, the median allocation would be less than one percent.

In the Bering Sea *C. opilio*, Bristol Bay red king crab, and the Bering Sea *C. bairdi* fisheries 10 or 11 catcher/processors would receive processing allocations that collectively account for between 7 and 8 percent of the allocations in these fisheries. In the St. Matthew blue king crab and the Eastern Aleutian Islands and Western Aleutian Islands golden king crab fisheries 2 or 3 catcher/processors would receive an allocation of processing shares.<sup>2</sup> In the Pribilof king crab fisheries, no catcher/processors would receive a processing allocation.

Ownership and use caps on processor shares are analyzed based on the initial allocations. These caps are intended to limit consolidation of processing shares. The analysis is limited because of confidentiality restrictions on the disclosure of data. The analysis shows that with the exception of the Western Aleutian Islands (Adak) golden king crab fishery, no processors would exceed a 50 percent cap based on the initial allocation. In the Bering Sea *C. opilio*, the Bristol Bay red king crab, the Bering Sea *C. bairdi*, the Pribilof red king crab, and the Pribilof blue king crab fisheries, no processors would exceed a 30 percent cap.

The section also examines vertical integration in the crab fisheries by analyzing the allocation of harvest shares to persons affiliated with processors (including catcher/processors). The Council has proposed limiting processor ownership of harvest shares to 8, 5, or 1 percent of the total allocation of harvest shares to restrict vertical integration in the fisheries.<sup>3</sup> In the Bering Sea *C. opilio*, the Bristol Bay red king crab, and the Bering Sea *C. bairdi* fisheries in excess of 40 vessels affiliated with processors (including independently owned catcher/processors) would receive an allocation. Under almost all of the initial allocation options between 4 and 5 processors would exceed a 1 percent cap on harvest share ownership in these fisheries. No processors

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<sup>1</sup> The median allocation is the allocation at the midpoint of the distribution, for which half of the allocations would be larger and half of the allocations would be smaller.

<sup>2</sup> These allocations cannot be disclosed because of confidentiality restrictions.

<sup>3</sup> Common ownership is defined as having 10 percent common ownership of a vessel and a processor.

would exceed a 5 percent cap in the Bering Sea *C. opilio* or the Bering Sea *C. bairdi* fisheries. In the Aleutian Islands golden king crab fisheries, between 1 and 4 processors would receive harvest share allocations depending on the allocation option selected. In the Western subdistrict, the number of processors exceeding any caps cannot be shown because of confidentiality restrictions. In the Eastern subdistrict, no processors would exceed either an 8 or 5 percent cap. Under the option that would determine the allocation based on combined harvests in the two subdistricts, the number of processors exceeding any caps cannot be shown because of confidentiality restrictions. In the Pribilof red king crab and Pribilof blue king crab fisheries, between 4 and 6 processors would receive an allocation of harvest shares. In the Pribilof red king crab fishery, no processors would exceed an 8 percent cap. No further information on the caps can be disclosed for this fishery. In the St. Matthew blue king crab fishery, 11 processors would receive an allocation of harvest shares. No processors would exceed either an 8 or 5 percent cap in this fishery. The number of processors exceeding the 1 percent cap cannot be disclosed. In the Western Aleutian Islands red king crab fishery, three processors would receive an initial allocation of harvest shares. No information concerning the number of processors exceeding the proposed share caps can be disclosed for this fishery.

#### Analysis of the option under which catcher/processors are allocated catcher/processor shares

If catcher/processors are allocated catcher/processor shares, in the Bering Sea *C. opilio*, the Bristol Bay red king crab, and the Bering Sea *C. bairdi* fisheries between 19 and 26 processors would receive an allocation in each fishery. The leading four processors would receive an average allocation of between 14 and 16 percent of the total processing allocation depending on which qualifying year option is selected. The average allocation would be less than 6 percent and the median<sup>4</sup> allocation would be less than 3 percent. In the Pribilof red king crab, Pribilof blue king crab, and St. Matthew blue king crab fisheries approximately 15 processors would receive allocations. The leading four processors would receive on average less than 20 percent of the total allocation. The median allocation would be less than 5 percent. In the two Aleutian Islands golden king crab fisheries, between 6 and 11 processors would receive an initial allocation. For those options which information can be disclosed, the four largest processor allocations would be between 20 and 25 percent of the total allocation. In the Eastern Aleutian Islands fishery, the median allocation would be between approximately 4 and 10 percent of the total allocation. In the Western Aleutian Islands fishery, the median allocation would be less than one percent.

In the Bering Sea *C. opilio*, Bristol Bay red king crab, and the Bering Sea *C. bairdi* fisheries between 9 and 11 catcher/processors would receive catcher/processor share allocations. In the St. Matthew blue king crab fishery 5 catcher/processors would receive catcher/processor share allocations. In the Eastern Aleutian Islands golden king crab fishery 0 or 1 catcher/processor would receive catcher processor shares. In the Western Aleutian Islands golden king crab fisheries and under the allocation option that would combine the Aleutian Islands golden king crab fisheries 1 or 2 catcher/processors would receive catcher processor shares. In the Western Aleutian Islands red king crab fishery 1 catcher/processor would receive catcher processor shares. In the Pribilof king crab fisheries, 0, 1, or 2 catcher/processors would receive catcher/processor shares depending on the qualifying year option selected.

Ownership and use caps on processor shares are analyzed based on the initial allocations. The analysis is limited because of confidentiality restrictions on the disclosure of data. The analysis shows that with the exception of the Western Aleutian Islands (Adak) golden king crab fishery, no processors would exceed a 50 percent cap based on the initial allocation. In the Bering Sea *C. opilio*, the Bristol Bay red king crab, the Bering Sea *C. bairdi*, the Pribilof red king crab, and the Pribilof blue king crab fisheries, no processors would exceed a 30 percent cap.

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<sup>4</sup> The median allocation is the allocation at the midpoint of the distribution, for which half of the allocations would be larger and half of the allocations would be smaller.

The section also examines vertical integration in the crab fisheries by analyzing the allocation of harvest shares to persons affiliated with processors (excluding catcher/processors). In the Bering Sea *C. opilio*, the Bristol Bay red king crab, and the Bering Sea *C. bairdi* fisheries between 25 and 35 vessels affiliated with processors (excluding independently owned catcher/processors) would receive an allocation. Under all of the initial allocation options 4 or fewer processors would exceed a 1 percent cap on harvest share ownership in these fisheries. No processors would exceed a 5 percent cap in the Bering Sea *C. opilio* or the Bering Sea *C. bairdi* fisheries. In the Aleutian Islands golden king crab fisheries, 1 or 2 processors would receive harvest share allocations depending on the allocation option selected. In neither subdistrict under the option that would allocate shares on combined harvests in the two districts would any processors exceed either an 8 or 5 percent cap. The number of processors exceeding a 1 percent cap cannot be shown because of confidentiality restrictions. Under some of the qualifying year options, no processors would exceed the 1 percent cap. In the Pribilof red king crab, Pribilof blue king crab, and St. Matthew blue king crab fisheries, between 3 or 4 processors would receive an allocation of harvest shares. In the Pribilof red king crab fishery, no processors would exceed an 8 percent cap. In the St. Matthew blue king crab fishery, no processors would exceed a 5 percent cap. No further information on the caps can be disclosed for these fisheries. In the Western Aleutian Islands red king crab fishery, 1 processor would receive an initial allocation of harvest shares. No information concerning the number of processors exceeding the proposed share caps can be disclosed for this fishery.

Cooperative Program Alternatives (Section 3.5). This section examines the cooperative program alternatives advanced in the Council motion. The section begins with a brief discussion of the cooperative alternatives that the Council has considered and excluded from analysis. These cooperative program options were deemed unsuitable for the crab fisheries. These options would potentially distort allocations from the historical participation, providing limited share protection to both harvesters and processors.

More importantly, the section examines the Voluntary Cooperative program and Plurality Assignment Cooperative program currently under consideration. The Voluntary Cooperative program would allocate harvest and processing shares similar to those under the IFQ program alternatives. The program would permit harvest share holders to form cooperatives associated with one or more processors holding a processing allocation. The program is intended to provide maximum flexibility, allowing the development of cooperative arrangements between participants that see an advantage to creating those arrangements. These agreements could help to ensure that more of each person's allocation is more harvested. This would be accomplished through pooling remaining shares at the end of a season so one vessel from the cooperative could be sent out to "mop-up" the remaining quota. This has been done in the BSAI pollock cooperatives, where the percentage of the TAC being left unharvested each year is very low relative to the halibut and sablefish IFQ programs.

Under the Voluntary Cooperative program share allocations would be made to both harvesters and processors regardless of whether cooperative agreements are entered. Because of this allocation system there would be no "open access" fishery. Persons that do not elect to join a cooperative would still receive a protected allocation.

The second cooperative program (the Plurality Assignment Cooperative program) would permit each harvester to enter a single cooperative associated with the processor to which he/she delivered the most pounds of crab during the qualifying period. Allocations are made to each cooperative based on the catch history of its members. Allocations earned by harvesters that do not join a cooperative are made to an open access fishery that is fished competitively by harvesters that do not join cooperatives. Because of the eligibility rules and a requirement that a cooperative have at least two members, over half of the processors that received deliveries from the crab fisheries during the qualifying period (but were not the recipient of the most catch from at least two harvesters) would not be able to associate with a cooperative in the first year of the program. Also under a 1994-99 qualifying period, five vessels would not be eligible to join a cooperative because they were the only vessel qualified to form a cooperative with their primary processor. These vessels would be required to participate in an open access fishery the first year of the program. Each year, participants in the open access



fishery would become eligible to join a cooperative associated with the processor to which it delivered the most crab in the open access year.

The all-or-nothing allocation of catch history to processors under this alternative could result in disparities between processing history and processor allocations. Historical data show that many catcher vessels made deliveries to multiple processors over the qualifying period. For example in the Bristol Bay red king crab for the open season from 1993-1999, a total of 255 vessels had qualifying landings. Only 163 of the vessels delivered at least 50 percent of their catch to the same processor. That means that only about 64 percent of catcher vessels delivered at least half of their catch to one processor. Under the Plurality Assignment Cooperative all the catch would be assigned for delivery to a single processor. To lessen the impact of requiring all of the catch to be assigned to a specific processor, alternatives are included that would require a cooperative to deliver a set percentage (ranging between 10 and 100 percent) of its allocation to its associated processor. Members of the catcher vessel sector have indicated that requiring only 80 percent of the catch to be delivered to the cooperative's processor would benefit harvesters, in terms of bargaining power and maintaining traditional markets, much more than requiring a 90 percent delivery rate. Processors on the other hand feel that as the percentage decreases from 100 percent they tend to be in a much weaker position to negotiate prices and make long term plans for their operations.

This program is difficult to characterize because several options have been proposed with vary degrees of connection between harvesters in a cooperative and the associated processor. The most stringent option would require delivery of all or most of a cooperatives allocation to an associated processor. The most lenient option would not require any deliveries to the associated processor. Similarly, the program has options defining the ability of harvesters to move between cooperatives. These range from unrestricted movement, subject only to the approval of the cooperative to which the harvester is moving, to options that require a year in the open access fishery.

The alternatives for allocation of shares to vessels under the cooperative program are the same as under the IFQ alternatives. Therefore, the discussion of quota allocations is only covered in the section on IFQ allocations.

Regionalization (Section 3.6) - This section examines the two alternatives that would establish a regionalization program. Regionalization of the fisheries is intended to protect community interests. The first alternative would divide the fishery into north and south regions, creating a requirement that landings and processing activity be distributed between the regions in accordance with historic participation patterns. Estimates of the distribution of shares under the alternatives are provided. North allocations in the Pribilof red king crab and Pribilof blue king crab, and St. Matthew blue king crab fisheries exceed 50 percent of the fishery. The allocations, however, vary by more almost 10 percent in the Pribilof blue king crab fishery and by more than 5 percent in the Pribilof red king crab fishery depending on whether the allocation is made under the years designated for allocating regional shares or the years designated for determining processor allocations. The significance of this difference is that use of different years for determining regional allocations and processor allocations could result in some processors being allocated shares for use in a region in which they have no processing history or facilities. In the Bering Sea *C. opilio* fishery the allocation to the north would be approximately 40 percent of the fishery. In the Bering Sea *C. bairdi* fishery the north allocation would be less than 5 percent under the only applicable regionalization option. Allocation of shares under the processor allocation option would allocate more than 20 percent to the north, because this allocation would be based on activity in the *C. opilio* fishery. In the Bristol Bay red king crab fishery, the allocation to the north would be less than 10 percent under any of the regionalization and processor allocation options. In the Aleutian Islands golden king crab fisheries, the north would receive no allocation.

The second regionalization alternative would create a link between processing activity and communities in which processing historically occurred. Under this option, processing would be permitted to relocate from a community only with permission of the community. In this draft, analysis of this option is strictly qualitative.

The allocation of shares to communities has the potential to impose hardships on both harvesters and processors. Determining the appropriateness of this option requires balancing these potential hardships against the potential benefit to communities of establishing a link between the processing activity and communities. Small allocations could burden processors by requiring that they either run processing facilities with small processing allocations or forgo processing a portion of their allocation. In addition, coordinating deliveries of crab to communities to exactly match the community allocation could be very challenging. Inability to reach an exact match would result in a portion of the GHL (or TAC) going unprocessed (and unharvested).

Binding Arbitration (Section 3.7) - This section examines two alternative binding arbitration agreements proposed by industry to govern ex-vessel price determinations between harvesters and processors. The two agreements differ only in that one would provide for an administrator to oversee the binding arbitration process. The administrator would appoint the arbitrator in cases where the two sides cannot agree on an arbitrator. Therefore the administrator would have substantial power in the process. The literature on binding arbitration suggests that implementing a binding arbitration process increases the conflicts between the two sides, and suggests that better outcomes are reached when two sides reach a negotiated agreement.

Options for Skippers and Crew (Section 3.8) - This section examines four options that are intended to protect skipper and crew interests. The first option would make an initial allocation of quota shares to skippers and/or crew. The allocation would be intended to provide those actively working in the fishery with an interest in the fishery. Several options for determining the allocation have been proposed. Eligibility would be based on either landings, verifiable by ADF&G fish tickets (or affidavits in the case of crew), or a point system, under which points are awarded based on participation verified by fish tickets or affidavit. Allocations could be made equally to all eligible participants or could be based on landings or points or some combination of these measures. Quantitative analysis of the option is limited by available data.

The second option would provide skippers and crew with a first-right-of-refusal on a portion of each share allocation, when those shares are first transferred. A similar provision would create an owner on board requirement for a portion of any shares transferred after a specified period. These options are intended to provide a method of entry to skippers and crew that wish to have an interest in the fishery. The third option would protect skippers and crew by guaranteeing their historical crew share and prohibiting vessel and quota share holders from reducing crew shares to cover the cost of participation in a share based fishery. This option is based on a system in the Canadian groundfish fishery. Preliminary research on this option suggest that enforcement of the provision could be problematic. The last option would create a low interest loan program to fund the purchase of quota shares by skippers and crew. This option would establish a program similar to that in the halibut and sablefish fishery.

CDQ Allocations (Section 3.9) - This section examines options for changing the allocations to CDQ groups in the different fisheries proposed for inclusion in the rationalization program. The analysis examines the allocations to both the CDQ groups and non-CDQ participants. Based on the GHL in the most recent fisheries, assuming the option for the highest CDQ allocation is adopted, the allocations to CDQ groups could range from a high of 3.3 million pounds in the Bering Sea *C. opilio* fishery to approximately 150 thousand pounds in the Pribilof red and blue king crab fisheries combined. These allocations would result in a decrease of approximately 13 thousand pounds and 1.3 thousand pounds from eligible non-CDQ participants in these fisheries.

Other Management and Allocation Issues (Section 3.10) - This section examines various management implications of the rationalization program, including the effects of rationalization on other fisheries, the possible need to continue AFA sideboards to limit activities of AFA participants in the BSAI crab fisheries, options that would specify the duration of the rationalization program and schedule periodic review of the program, and the need for a cost recovery program to cover the cost of management of the rationalized fisheries.

Crab rationalization may increase the opportunities for BSAI crab vessels to participate in other fisheries. LLP data indicates that 253 of the crab vessels hold at least one groundfish endorsement (this includes the 42 AFA catcher vessels). These vessels would be allowed to participate in groundfish fisheries using that license. However the options for many of these vessels are limited in groundfish. Groundfish endorsements are area specific and licenses are expected to have gear endorsements added in the next year. Pacific cod endorsements are expected to be added to BSAI groundfish licenses as a result of Amendment 67 (47 pot catcher vessels are expected to qualify for a cod endorsement). Pacific cod is the most likely candidate for expansion by the crab fleet. However, the restrictions currently in place for the cod fishery limit the expansion that can occur in that fishery. The quota is already split among fixed, trawl, and jig gear vessels and Amendment 67 limits new entry. However, Amendment 64, which further allocates the quota among the fixed gear components, sunsets at the end of 2003. There may be more concern in the GOA cod fisheries where fewer restrictions are placed on entry. Information on the number of vessels licensed to harvest groundfish in the GOA, the number of vessel that actually participated in Western and Central Gulf, and the catch of those vessels over the 1995-2000 fishing seasons is reported in this section.

Increases in participation of BSAI crab vessels in State managed fisheries, including the GOA crab and the State of Alaska GOA cod fishery, could be limited by State regulations. The State waters cod fisheries are often managed with pot limits and vessel size restrictions. Those limits either make the fisheries unavailable or less attractive to large crab vessels. The GOA crab fisheries have had relatively low GHs, when open in recent years. The pot limits applied to those fisheries may also make them less attractive to large BSAI crab vessels.

Including AFA vessels/processors in the quota allocation process may eliminate the need for harvesting processing sideboards in the BSAI crab fisheries. The allocation alternatives would result in AFA vessel harvests and processing allocations similar to the caps. Limits on the amount of quota AFA vessels and processors can purchase after the initial allocation could prevent them from using BSAI pollock monies to increase their share holdings. These limits could also be accomplished through the ownership caps being considered.

A cost recovery program is mandated for all new IFQ programs. The maximum fee that can be levied against the fleet is 3 percent of the ex-vessel value for harvest IFQ programs. However, the possible processor allocations raise the question of whether cost recovery should apply to processors under a two-pie IFQ program. Since they are benefitting from an allocation that would have management costs associated with it, should they be included in a cost recovery program to pay for its management?

Economic Effects of Rationalization (Section 3.11) - This section examines various economic effects of rationalization. The section begins with an analysis of net benefits that examines changes in benefits that might be realized by producers (including both harvesters and processors) and consumers, as well as changes in benefits realized through management cost changes and environmental impacts. The section also examines the distributional consequences of rationalization relying on economic analyses of rationalization programs in other North Pacific fisheries. The section also examines opportunities for entry to the rationalized fisheries and the effects of rationalization on different vessel classes.

Effects of Rationalization on Products and Consumers (Section 3.12) - This section examines potential changes in products and other effects on consumers of rationalization of the fisheries. The analysis draws on prior experiences in North Pacific fisheries as well as conversations with participants in the industry. The expected slower pace of the fishery and less compacted delivery times should allow processors to improve sorting and grading of crab and improve employee training. Improved product grading could benefit both participants in the fisheries and consumers. Also expanding season lengths should decrease storage costs and allow consumers to purchase a fresher product as harvests can be better timed to market demand. Freezing techniques could also be modified to make more use of plate and blast freezers which would result in a higher quality product.

The Effects of the Crab Vessel Buyback Program (Section 3.13) - This section of the analysis examines the effects of the vessel buyback program on the rationalization program. We have assumed that the buyback program will purchase vessels, LLP licenses, and catch history. The analysis is qualitative because the participation in this voluntary program cannot be quantitatively predicted.

The buyback program will tend to increase the allocation of the harvesters that remain in the fishery by the percentage of qualifying catch that was removed from the quota share pool. Because the buyback program is specific to harvesters, it will cause a redistribution of processor “allocations” under the Plurality Assignment Cooperative. Processors that have more of their fleet bought out (in terms of cooperative allocation) relative to other processors would be worse off as a result of the buyback. Also, because catcher/processors are not part of the buyback, they will receive a larger harvest allocation under all of the rationalization alternatives. Depending on whether processing allocations to catcher/processors are based on their harvest allocations or their processing history, buyback could either allow them to process their entire harvest and increase their processing allocations or prevent catcher/processors from processing their entire allocation and have no effect on their processing allocations.

The section also includes a discussion of the potential for a processor buyback program and the issue of stranded capital in the processing sector.

#### Foreign Ownership (Section 3.14)

This section analyzes foreign ownership in the BSAI crab fisheries. Foreign ownership of both harvesting and processing sector interests are considered.

#### Custom Processing (Section 3.15)

This section presents an analysis of custom processing in the BSAI crab fisheries. Custom processing accounted for more than 8 percent of the processing of red king crab between 1995 and 2000. In 2000, custom processing accounted for more than 10 percent of all crab processing in the regions that process BSAI crab. The analysis also discusses the potential for custom processing in a rationalized fishery.